

What is claimed is:

1. An isolated and purified DNA encoding a humanized green fluorescent protein from *Ptilosarcus gurneyi* having the coding sequence of SEQ ID No. 1.
2. An isolated and purified green fluorescent protein truncated mutant from *Ptilosarcus gurneyi* having at least one amino acid deletion occurring within amino acids 3-10 of SEQ ID No. 2 wherein the amino acid at position number 1 is methionine and at position number 2 is valine.
3. An isolated and purified green fluorescent protein from *Ptilosarcus gurneyi* having the truncated coding sequence of SEQ ID No. 3.
4. An isolated and purified green fluorescent protein from *Ptilosarcus gurneyi* having the truncated coding sequence of SEQ ID No. 4.
5. An isolated and purified synthetic DNA encoding the green fluorescent protein of Claim 1 having about at least 76% identity with the DNA sequence encoding wild type green fluorescent protein from *Ptilosarcus gurneyi*.
6. An isolated and purified synthetic DNA as in Claim 1 wherein the codon usage is optimized for mammalian expression systems.
7. An isolated and purified synthetic DNA as in Claim 5 wherein the codon usage is optimized for mammalian expression systems.
8. An isolated and purified recombinant nucleic acid encoding a protease biosensor, comprising:
  - a first nucleic acid sequence that encodes at least one detectable polypeptide signal from a humanized green fluorescent protein from *Ptilosarcus gurneyi*;
  - a second nucleic acid sequence that encodes at least one protease recognition site, wherein the second nucleic acid sequence is operatively linked to the first nucleic acid sequence that encodes at least one detectable polypeptide signal ; and
  - a third nucleic acid sequence that encodes at least one reactant target sequence, wherein the third nucleic acid sequence is operatively linked to the second nucleic acid sequence that encodes at least one detectable protease recognition site.

9. The recombinant nucleic acid of Claim 8 wherein the first nucleic acid encodes the protein sequence of SEQ ID No. 1.
10. The recombinant nucleic acid of Claim 8 wherein the first nucleic acid encodes the protein sequence of SEQ ID No. 3.
11. The recombinant nucleic acid of Claim 8 wherein the first nucleic acid encodes the protein sequence of SEQ ID No. 4.
12. The recombinant nucleic acid of Claim 8 wherein the first nucleic acid has at least sixty percent identity with the nucleotide sequence encoding wild type green fluorescent protein from *Ptilosarcus gurneyi*.
13. The recombinant nucleic acid of Claim 8 wherein the second nucleic acid is a DNA sequence encoding a caspase protein.
14. The recombinant nucleic acid of Claim 8 wherein the third nucleic acid is a DNA sequence encoding an annexin protein.
15. The recombinant nucleic acid of Claim 8 wherein the first nucleic acid is operatively linked to the second nucleic acid by a nucleic acid sequence comprising a nuclear localization signal.
16. The recombinant nucleic acid of Claim 15 wherein the nuclear localization signal is the amino acid sequence RRKRQKR.
17. The recombinant nucleic acid of Claim 8 wherein the first nucleic acid is an isolated and purified green fluorescent protein truncated mutant from *Ptilosarcus gurneyi* having at least one amino deletion occurring within amino acids 1-10 and 225-239 of SEQ ID No. 2 wherein the amino acid at position number 2 is a valine.
18. The recombinant nucleic acid of Claim 17 wherein the first nucleic acid is operatively linked to the second nucleic acid by a nucleic acid sequence comprising a nuclear localization signal.
19. The recombinant nucleic acid of Claim 18 wherein the nuclear localization signal is the amino acid sequence RRKRQKR.
20. The recombinant nucleic acid of Claim 19 wherein the second nucleic acid is a DNA sequence encoding a caspase protein and wherein the third nucleic acid is a DNA sequence encoding an annexin protein.

21. The isolated and purified green fluorescent protein truncated mutant of claim 2 wherein the amino acid sequence is the amino acid sequence of SEQ ID No. 5.
22. The isolated and purified green fluorescent protein truncated mutant of claim 2 wherein the amino acid sequence is the amino acid sequence of SEQ ID No. 6.
23. The isolated and purified green fluorescent protein truncated mutant of claim 2 wherein the amino acid sequence is the amino acid sequence of SEQ ID No. 7.
24. The isolated and purified green fluorescent protein truncated mutant of claim 2 wherein the amino acid sequence is the amino acid sequence of SEQ ID No. 8.
25. The isolated and purified green fluorescent protein truncated mutant of claim 2 wherein the amino acid sequence is the amino acid sequence of SEQ ID No. 9.
26. The isolated and purified green fluorescent protein truncated mutant of claim 2 wherein the amino acid sequence is the amino acid sequence of SEQ ID No. 10.
27. The isolated and purified green fluorescent protein truncated mutant of claim 2 wherein the amino acid sequence is the amino acid sequence of SEQ ID No. 11.
28. The isolated and purified green fluorescent protein truncated mutant of claim 2 wherein the amino acid sequence is the amino acid sequence of SEQ ID No. 12.
29. The isolated and purified green fluorescent protein truncated mutant from *Ptilosarcus gurneyi* having at least one amino acid deletion occurring within amino acids 225-239 of SEQ ID No. 2 wherein the amino acid at position 1 is methionine and at position number 2 is valine.
30. The isolated and purified green fluorescent protein truncated mutant of claim 29 wherein the amino acid sequence is the amino acid sequence of SEQ ID No. 13.
31. The isolated and purified green fluorescent protein truncated mutant of claim 29 wherein the amino acid sequence is the amino acid sequence of SEQ ID No. 14.
32. The isolated and purified green fluorescent protein truncated mutant of claim 29 wherein the amino acid sequence is the amino acid sequence of SEQ ID No. 15.
33. The isolated and purified green fluorescent protein truncated mutant of claim 29 wherein the amino acid sequence is the amino acid sequence of SEQ ID No. 16.
34. The isolated and purified green fluorescent protein truncated mutant of claim 29 wherein the amino acid sequence is the amino acid sequence of SEQ ID No. 17.

35. The isolated and purified green fluorescent protein truncated mutant of claim 29 wherein the amino acid sequence is the amino acid sequence of SEQ ID No. 18.
36. The isolated and purified green fluorescent protein truncated mutant of claim 29 wherein the amino acid sequence is the amino acid sequence of SEQ ID No. 19.
37. The isolated and purified green fluorescent protein truncated mutant of claim 29 wherein the amino acid sequence is the amino acid sequence of SEQ ID No. 20.
38. The isolated and purified green fluorescent protein truncated mutant of claim 29 wherein the amino acid sequence is the amino acid sequence of SEQ ID No. 21.
39. The isolated and purified green fluorescent protein truncated mutant of claim 29 wherein the amino acid sequence is the amino acid sequence of SEQ ID No. 22.
40. The isolated and purified green fluorescent protein truncated mutant of claim 29 wherein the amino acid sequence is the amino acid sequence of SEQ ID No. 23.
41. The isolated and purified green fluorescent protein truncated mutant of claim 29 wherein the amino acid sequence is the amino acid sequence of SEQ ID No. 24.
42. The isolated and purified green fluorescent protein truncated mutant of claim 29 wherein the amino acid sequence is the amino acid sequence of SEQ ID No. 25.
43. The isolated and purified green fluorescent protein truncated mutant of claim 29 wherein the amino acid sequence is the amino acid sequence of SEQ ID No. 26.
44. The isolated and purified green fluorescent protein truncated mutant of claim 29 wherein the amino acid sequence is the amino acid sequence of SEQ ID No. 27.
45. The isolated and purified green fluorescent protein truncated mutant from *Ptilosarcus gurneyi* having at least one amino acid deletion occurring within amino acids 3-10 and at least one amino acid deletion occurring within amino acids 225-239 of SEQ ID No. 2 wherein the amino acid at position number 1 is methionine and at position number 2 is valine.